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ANNUAL ADDRESS.

INTRA-PERITONEAL HÆMORRHAGE.

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Although having accepted the compliment of an invitation to address your honorable body, I am, nevertheless, impressed with the serious nature of the task. My predecessors have often been men of such distinction in the profession that success was sure to crown their efforts. Such merit as may be lacking on my part I trust may be atoned for by my willingness to make a considerable personal sacrifice to be present at your meeting. A sacrifice that was not without a sense of pleasure in anticipation, since it was to give me the opportunity of meeting so many eminent physicians in a city which is rapidly coming to the front as one of the most important medical centres of this country.

It might seem fitting that one who has been familiar with the various steps which have preceded the scientific development of medical education in this country during the past twenty-one years might have something to offer on this topic. In almost any other city much might be said which would perhaps serve as criticism, encouragement or stimulation. In Baltimore, however, in the present year of grace, even an enthusiastic advocate of the higher medical education may well hold his peace. It is for your university to establish and elaborate the model American medical school of the coming generation; as it has been the task of Harvard to faithfully, fearlessly, but always, I hope, judiciously work toward the same end during the past generation.

In this work, too, we have been obliged to seek for aid from you—our professor of pathology has long been one of

your distinguished members, one who has made illustrious the name of your city and State. I can assure you that in the acquisition of Dr. Councilman we feel that a new impetus has been received to add force and breadth to our development. Another of your honored representatives we have gained but to lose. In Professor Howell, our physiological department seemed to have acquired a most important addition to its strength. The lapse of a few months has shown that a wider sphere of usefulness is to be opened to him, and his future labors are to be performed where his earliest distinction has been won.

No greater encouragement can be offered to seekers for progress than to find themselves emulated, even if surpassed, by others whose opportunities may be larger and less restrained.

However high may be the standard of the Johns Hopkins University Medical School; it can be none too high for other schools to strive for. The success of its efforts lies in the hands of such organizations as your honored society and of kindred societies throughout the land.

The practice of medicine is the ultimate aim and object for which all medical schools must provide. However interesting the study of anatomy, physiology and chemistry may be for their own sake, they are but preliminary studies. They belong legitimately to a preparatory course; not merely to the study of medicine, but to fit the youth to better undertake any professional work, to better pursue mercantile careers, to become better citizens.

They are university studies; and may furnish the best possible training for some individuals to reach the highest success in whatever profession or occupation may be followed. It is the application of anatomy and physiology and chemistry which more exclusively belongs to the medical school. It may be that in our own day of progress these subjects are best taught as sciences where they are most needed for the practical wants of mankind. But chemistry has already become so far-reaching in its industrial possibil-

ties that the merest elements of the science are now required for the immediate needs of the medical practitioner.

It may be questioned whether physiological chemistry is not, strictly speaking, as much of a preparatory study as is general, descriptive and analytical chemistry. Its student need have no aspirations or leanings towards a medical career. He may even find a life's occupation in its pursuit, irrespective of any application of his work to the recognition, prevention or treatment of disease. Pathological chemistry, on the other hand, is of the utmost importance to the physician. Without it his possibilities of recognizing disease, of testing the value of his measures for its relief, may be sadly handicapped. With it there are placed before him far-reaching possibilities in the diagnosis, prevention and treatment of disease, whose scope none of us can define.

The chief end of the vast majority of medical students is to be taught to practice the various branches of medicine and surgery. As the opportunities for development in these directions are offered, the student finds himself more attracted in the one direction than in the other; and his future occupation is the more medical or the more surgical, sometimes against his wishes and despite his control. He is inclined to look upon the treatment of his patient more from the medical or from the surgical point of view, as his opportunities for development have been in the one direction or in the other. This tendency is nowhere more strikingly shown than in the treatment of the diseases of the abdominal cavity. The frequent inefficacy of medical treatment, the immediate benefit often afforded by the surgeon, tend to make the physician less confident of his resources as they make the surgeon bolder in the employment of his methods. The practice of medicine thus tends, in many directions, to become more and more the practice of surgery. But a prevailing tendency is always liable to become extreme and should be guarded against.

In no respect has the progress of abdominal surgery led to more brilliant results than in the treatment of certain

varieties of intra-peritoneal hæmorrhage. After the abdomen has been opened the diagnosis is easily made and an existing or threatening hæmorrhage is readily controlled. The surgeon is thus tempted by the success of his exploration in a doubtful case to forget that a surgical operation is a therapeutic necessity, not a diagnostic procedure. He reasons that because persons have sometimes bled to death when a laparotomy might have saved life, therefore it is necessary to give the patient the chance of having life saved by this operation, although the danger is rather suggested than imminent.

He is not inclined to recognize that the benefit of the doubt may lie rather in the saving of life without an operation. The success of a successful operation is so immediate and positive that it is easy to overlook or disregard the large percentage of recoveries under medical treatment from similar symptoms with all but demonstrable similar lesions. But the finding of a blood-clot after the abdomen has been opened is no necessary justification for the search for it. The tendency to do something when in doubt must always yield to the duty of doing what is most judicious.

It seems, therefore, not unprofitable to consider the subject of intra-peritoneal hæmorrhage from a general point of view, especially bearing in mind the experience of the past, with the hope that the indications for its medical treatment may be made conspicuous and the existence of limitations for its surgical treatment be emphasized.

In requesting your attention to this subject it is not planned to offer any new evidence, but to call to your mind conclusions, which have been previously presented, in such a form as may suggest that differences of opinion still exist as to the best method of treating the class of disease under consideration. To carry out this plan it is necessary to consider the various causes of intra-peritoneal hæmorrhage, their symptoms and results.

The prevailing idea that intra-peritoneal hæmorrhage is always a disease of women and is the result of ectopic gestation has a certain practical value, but is not true. Mild and

fatal cases occur in men, though in far less proportions than in women. That the haemorrhage may take place it is essential that blood-vessels rupture. The rupture demands a weakened vascular wall. This weakening is the result of causes which may occur in either sex alike or may be limited to the female sex.

Obvious causes are the wounds which penetrate the abdominal wall or viscera from without, or which crush or tear the subjacent vessels without signs of external lesion.

The hidden causes are those which demand closer attention. Among these, aneurismal dilatation requires consideration. More common in man than in woman, abdominal aneurisms are usually irremediable. But when they affect the secondary branches of the abdominal aorta, as the smaller omental or mesenteric arteries, the timely treatment of their rupture may save a life otherwise lost.

Fatal intra-peritoneal haemorrhage is no rare result of the rupture of blood-vessels in malignant tumors of the liver, pancreas and ovaries.

The greatest practical importance, however, is to be attached to the pelvic sources of haemorrhage. These are to be found almost exclusively in the genital organs of the female. They are the dilated and weakened vessels in the ovaries and broad ligaments, as well as those developed in the course of a tubal or abnormal uterine pregnancy. In this series is to be included the haemorrhagic pelvic peritonitis, almost invariably limited to women and usually originating from disturbances arising in the genital tract.

Haemorrhages from scurvy, purpura, haemophilia, infectious diseases and phosphorous poisoning are without practical importance in the present consideration.

The effects of a rupture of the blood-vessels are, as Veit has conspicuously shown, essentially dependent upon the escape of blood into the open peritoneal cavity or into a part which has been separated from the rest by adhesions. In the former case the blood is poured out without hindrance; more or less rapidly according to the calibre of the ruptured vessel, the size of the opening, the volume of blood and the

strength of the heart. The result is a hæmoperitoneum. The liquid and clotted blood lies in the lowermost parts of the abdominal cavity beneath and between the intestines. According to the extent of the haemorrhage the hæmoperitoneum either proves rapidly fatal or the blood is absorbed, except in occasional instances, without the production of a tumor.

If the haemorrhage takes place into a part of the peritoneal cavity shut off from the rest by adhesions, a hæmatocoele follows. The hæmatocoele is usually pelvic in its origin and seat, occurs in the female, and forms a tumor. If the bleeding continues, this tumor enlarges, and may subsequently rupture and produce a hæmoperitoneum. If the bleeding ceases the frequent result is the absorption of the clot. But the hæmatocoele is generally seated in the pelvis, a region in which septic infection of the clot may be easy, and the infected clot then causes a destructive inflammation of the surroundings. There are peritonitic adhesions to the walls of the rectum, vagina or bladder; and a septic peritonitis follows, or a discharge of the softened clot takes place into one of the hollow organs above mentioned; oftenest into the rectum, then into the vagina, rarely into the bladder. The discharge into the rectum or vagina if properly controlled is usually harmless and beneficial; while that into the bladder is most serious, from the extension of the resulting cystitis to the kidney, with the production of a pyelonephritis. Perforation may also take place elsewhere in the bowel, with permanent fistulae, through the hæmatocoele, between the ileum or cæcum, into the rectum. Absorption without septic infection may take place, however, and the possibility of the occurrence of the above complications is an insufficient justification for a severe operation for their prevention.

Intra-peritoneal haemorrhages may thus be divided into those which are immediately or remotely dangerous and those which are comparatively harmless. The immediately dangerous are such in virtue of the rapidly progressing anaemia. The remotely dangerous become so in consequence

of the complications which may arise in the subsequent history of the extravasated blood.

In the practical consideration of the individual case it first becomes necessary to establish the existence of an intra-peritoneal haemorrhage, then to determine its cause and finally to decide upon its treatment. That the diagnosis is not always easy, and is sometimes extremely difficult, is obvious to all who have had experience in the matter or who are familiar with the literature of the subject. An exploratory laparotomy has often proven to be the only means by which the diagnosis has been established; and has also repeatedly made clear that there was no intra-peritoneal haemorrhage, which had been suspected.

A well person, suddenly seized with rapidly advancing collapse, presenting a pinched, sunken face, an anxious and fearful expression, cold extremities, a clammy skin, deep and sighing respiration, a hollow, husky voice, an almost imperceptible pulse, and without other objective symptoms, is, presumably, suffering from a concealed haemorrhage. Abdominal or pelvic pain is the only positive localizing symptom, and may not be of extreme severity or of prolonged intensity. Various sources of intra-abdominal haemorrhage may be excluded—as the stomach intestines, urinary tract or uterus—by the absence of previous symptoms pointing to disease of these organs, and by the failure of blood to appear in the vomit, stools, urine or vagina. A gastro-intestinal source of so serious a haemorrhage is usually preceded by long continued attacks of pain in the region of the stomach or duodenum, or by symptoms of typhoid fever or of fibrous hepatitis. Metrorrhagia sufficient to produce so profound a collapse occurs only with placenta prævia or after child birth; while renal or vesical haemorrhage, even when severe, would fail to produce so much immediate disturbance.

The existence of a severe intra-peritoneal haemorrhage is thus to be established by exclusion. Veit has shown that there are no physical signs sufficient to prove the presence of a large quantity of blood in the free peritoneal cavity.

It gives rise to no more dullness than may result from intestinal contents ; it offers no more resistance to the palpating finger than may be offered by coils of intestine.

The treatment of so severe an intra-peritoneal haemorrhage as that above suggested, necessarily depends upon its cause. If it is due to an aneurism of the abdominal aorta, or to a cancer of the liver or pancreas, a laparotomy is useless, except, perhaps, to offer in anaesthesia an easy means of dying. Antecedent symptoms are likely to have given evidence of these lesions and, fortunately, death is often so rapid from these causes that time is lacking even for anaesthesia.

On the contrary, immediate laparotomy is indicated for such severe intra-peritoneal haemorrhage when an aortic aneurism or a malignant abdominal tumor is to be excluded. The causes are then to be found in a small aneurism or in an ectopic gestation.

The former is rare, of greater frequency in man ; the latter common and preceded by symptoms which are often sufficiently suggestive. These are the omitted menses, the irregular metrorrhagia, decidual discharge, paroxysmal or peritonitic pain, and possibly, on vaginal examination, a tumor outside of the uterus, with slight enlargement of the latter. The tumor often fails, when much needed for diagnosis, from simultaneous extrusion of the foetus and escape of blood into the abdominal cavity.

The collapse may be less profound, though still severe, and be independent of haemorrhage into the peritoneal cavity or into the hollow organs of the abdomen. A ruptured ovarian cyst, or a tumor with a twisted pedicle, may then be concerned. In either case a tumor of sufficient size to be easily recognized will be found. An eventual laparotomy is then unquestionably demanded ; an immediate laparotomy may be extremely injudicious.

The cases then presenting the greatest difficulty in diagnosis are those where the question of treatment may best be in dispute. Debility and exhaustion are present; unexpected,

perhaps, but not extreme. There is moderate pallor, and the pulse is but slightly accelerated or weakened. The abdomen or pelvic pain may be as severe and sudden as before, but the constitutional disturbance is less. Such a patient may walk into the consulting room complaining of little else than pain. In this class of cases there is no considerable haemorrhage into the free peritoneal cavity, but a circumscribed tumor will be found on pelvic examination. It is the nature of this tumor which demands most careful consideration. It should be determined, if possible, by other means than by an exploratory laparotomy. If this is employed the treatment becomes of necessity abdominal and surgical, whereas in many instances it should be medical, or, if surgical, then vaginal or rectal.

Such cases are almost invariably limited to women. Similar symptoms may occur in man, as in a case recently under my observation in the practice of Dr. Loring, of Newton. They proved to be due to an extensive sub-peritoneal haematoma from a ruptured small aneurism of the iliac artery. The pelvic tumor is to be found, at the outset, near the uterus, usually behind or at one side. It is firm, elastic, sensitive, and when early appreciated, may be as large as an orange. Such a tumor may be a pus tube, or an ovarian or uterine tumor, but these lack the sudden development of anaemic symptoms. It may be a retrofixed, pregnant uterus, which is to be eliminated by finding a dilated bladder and a history of urinary retention. The tumor may be due to retained menses or to pregnancy in a rudimentary horn. The tumor then forms a part of the uterus, the os being dilated and crescentic. By way of exclusion, then, the tumor is likely to prove a haematocele or a haematoma of the broad ligament.

The same causes, viz., ruptured vessels in the ovaries, tubes and broad ligaments, are concerned in the origin both of the haematoma and the haematocele. In addition, the latter may be caused by an antecedent attack of pelvic peritonitis, which is likely to be inferred from the previous history of the patient. The usual cause of each is to be found in an

ectopic gestation, the important features in the recognition of which have already been stated. The effect upon the foetus is likely to be the same in either case. The quantity of blood poured out is usually sufficient to destroy the foetus if it lies between the folds of the broad ligament; and the same result is likely to follow the rupture of the sac in which the foetus is contained. In either case the haemorrhage usually takes place outside the foetal membranes. Compression by the extravasated blood is the probable event in case of the haematoma; extrusion of the foetus, with or without its membranes, is the probable event where the rupture of the material enveloping membrane takes place into the peritoneal cavity.

Unfortunately the distinction between the two is not always, perhaps not often, to be determined by physical examination. Yet the best treatment of the haematoma is almost universally recognized to be expectant, that is, medical; while that of the haematocele is often in dispute. The important practical point of distinction between intra-peritoneal haemorrhage with and without a tumor is, that delay is possible and desirable in the latter case, dangerous, perhaps fatal, in the former.

The diagnosis of the haemorrhagic nature of the tumor often becomes confirmed in the course of twenty-four hours by the subsequent symptoms. It is likely to become larger and eventually may even be of the size of a child's head. It fills the pelvis, perhaps projects above it, and presses upon the bladder, rectum or pelvic nerves. Frequent micturition, painful stools, pains or parasthesiae in the legs are likely to ensue. The vaginal wall becomes depressed behind or in front. The uterus is elevated near the symphysis or in the hollow of the sacrum, according to the retro or antero-uterine seat of the tumor. Symptoms of a mild localized peritonitis now become apparent. There is chilliness and slight fever, the latter lasting but a few days, hypogastric and vaginal tenderness, which may remain for some time longer. The tumor tends to become smaller, denser and in the course of time may be represented merely by a diffuse

induration. The larger the hæmatocoele the more prolonged the period of absorption and the greater the liability of the patient to discomfort from the associated adhesions, obliterated tubes, dislocated ovaries and displaced uterus. Dysmenorrhœa, sterility and chronic invalidism are then not unlikely results.

In other cases it becomes increased in size, with recurrence of the acute symptoms. The more frequent the recurrence the graver the condition, the greater the danger of perforation. This may be expected to take place into the rectum when the latter becomes irritable, as shown by frequent mucous discharges and tenesmus. Rectal examinations may then reveal a soft spot in the elsewhere hard wall of the tumor, indicating the point where the discharge is to take place. In like manner a pointing of the hæmatocoele into the vagina may be shown by a yielding, bulging mass on digital examination of this cavity. The evacuation is followed by temporary relief, which may become permanent with the disappearance of the tumor. On the other hand, as before stated, if infection from the rectum or vagina takes place, leading to putrefaction of the clot and gangrene of the wall, symptoms of peritonitis are likely to appear. But the infection of the cavity of the tumor may be rendered harmless after its occurrence or be prevented from taking place without the need of a laparotomy.

In brief, the recognition of a pelvic tumor and the more accurate determination of its nature in connection with the symptoms of intra-peritoneal hæmorrhage is of the greatest importance. Small and large hæmorrhages into the free peritoneal cavity may occur with or without the presence of a tumor. Small hæmorrhages are readily absorbed; large hæmorrhages, without surgical interference, prove fatal in the course of a few hours or days and require immediate laparotomy, whether a tumor is present or not.

If the symptoms are less urgent and a large tumor is present, especially if there is no history suggestive of pregnancy, and there is the previous knowledge of a tumor, the laparotomy may be postponed until the patient recovers from the

shock, due, probably, to the twisting of the pedicle of a uterine or ovarian tumor, or to the rupture of a cyst.

If the symptoms are less urgent and a small tumor is present, the case will bear watching. The condition is likely to be a hæmatocele or a hæmatoma. In either event there is no urgency unless hæmorrhage persists, the tumor greatly enlarges or ruptures, and a hæmo-peritoneum results, in which case there can be no question of an immediate laparotomy.

Frequently the extravasated blood is likely to be absorbed without serious disturbance. The patient should therefore be treated by ice to the abdomen, rectal or vaginal enemata of cold water, and by opiates for the relief of pain. Absolute rest, the use of the catheter and saline laxatives complete the requirements of treatment.

If, as stated by Gusserow, the hæmatocele is so large as to be mechanically disturbing or absorption ceases, or the circumstances of the patient do not permit slow absorption, or prolonged rest afterwards, or if the contents become infected, as indicated by symptoms of septicæmia, the tumor should be opened, emptied and drained without delay. Whether the incision should be made through the abdominal, vaginal or rectal wall must be determined in the individual case, with a general tendency in favor of vaginal drainage.

The great success which has followed the vaginal incision, the tumor being opened and the clots removed, has been repeated so many times by so many operators that it is unquestioned. This too, without waiting for any of the possibilities which make the operation demanded. It has often been done in the early history of the tumor, to save time in healing or to obviate possible repeated or continued hæmorrhage. Healing may be even more rapid than after abdominal incision, days only elapsing between the operation and the recovery of the patient. The comparative merits of the various methods of treatment can only be determined after the lapse of time. The older statistics with reference to treatment by purely medical methods or by puncture, even by incision, are no absolute standard of what may be done

now, with a better understanding of the etiology of the condition, a surer knowledge of the complications which may arise and a more complete appreciation of their timely prevention. The recommended early abdominal incision is not yet sufficiently proven to be without serious after-effects; in the production of hernia, or in the formation of abscesses which may lead to intestinal obstruction or may act in favor of producing a subsequent intra-peritoneal haemorrhage, from the same cause, namely, ectopic gestation. That this is no fanciful assumption has been recently illustrated in the practice of my friend, Dr. F. B. Harrington, of Boston, who has twice operated upon the same woman for intra-peritoneal haemorrhage from ectopic gestation within a period of two or three years.

The comparative results of other treatment than laparotomy as shown by Zweifel a few years ago are as follows:

Of 144 cases treated expectantly, 16.6 per cent. were fatal; 66 cases treated by puncture, 15.1 per cent. were fatal; 30 cases treated by vaginal incision, 10 per cent. were fatal.

The medical treatment of intra-peritoneal haemorrhage, when feasible, permits the patient to recover without operation and renders possible and easy operation when necessary, and one not demanding especial skill.

Laparotomy for intra-peritoneal haemorrhage is unnecessary in a large number of cases and when undertaken substitutes a severe for a simple operation, and one requiring considerable technical skill, therefore not generally applicable.

In bringing these remarks to a conclusion, I must apologize for my shortcomings in presenting to you rather a medical essay than an address or oration. The last term would have been so discouraging that I should have declined the attempt had I known it was to appear under this term. Professor Welch, in extending me your invitation, allowed me the usual license of selecting my subject. I trust I may have interested you in the practical side of the question, even if I have presented it under the false colors of a dignified title.

